TRAILMAX®
Quality Trailers From
Gem State Manufacturing, Inc.

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Section 1 Operation

1.0 Introduction

This section describes how trailers can have different operational characteristics based on design, load configuration, gross weights, suspension characteristics, articulation and extreme differences between loaded and unloaded weights.

Trailers have safe operating limits just as automobiles, airplanes, and other vehicles. The interaction of the vehicle characteristics, maintenance, load, roadway, weather, the skill of the driver and vehicle speed affect these limits. Knowledge of how these factors affect the vehicle's operating limits and utilization of defensive driving techniques should result in safer driving.

1.1 Purpose

The purpose of this section is to describe how the vehicle characteristics, maintenance, road conditions, and weather can affect trailer control and stability limits, and how driver awareness and skill can help compensate for these factors. This knowledge will assist you to safely enjoy the maximum utility and productivity from your trailer.

First and foremost, DO NOT operate the trailer until you have read and fully understand this instruction and operating manual. It is also important that each and every person who operates the trailer be given the opportunity to read this manual.

1.2 Rating

Gross Axle Weight Rating (GAWR) is the rated load-carrying capacity of an individual axle and wheel assembly. It represents the load that may be steadily sustained by the components in the system; i.e., tires, wheels, hubs, bearings, axles, brakes, suspension, sub-frame, etc. with the GAWR limited by the component with the lowest working rating. Consideration of environmental and operational factors may require the manufacturer to reduce the nominal rating.

Gross Vehicle Weight Rating (GVWR) is the maximum rated combined weight of a trailer and its payload (uniformly distributed) based on its structural capabilities.

1.3 Design and Safety Factors

The safety factor is a ratio between the design stress imposed by the load sitting static on the trailer and the minimum yield stress of the steel used in construction of that trailer structure. For example, if the structure is built using 50,000 psi minimum yield strength steel and the load sitting on it causes a stress level of 25,000 psi then a 2:1 safety factor would exist. THIS SAFETY FACTOR DOES NOT MEAN THAT THE STRUCTURE CAN THEN BE USED TO CARRY TWICE THE RATED LOAD. Under dynamic conditions, or as the trailer moves and encounters shocks, vibrations, twists and other conditions that exist during transport, stress levels are elevated far beyond those in the static situation.

Distributed Load is when a load is distributed evenly over the length of the trailer deck. This would be considered as the ideal load scenario when fully loaded to rated capacity.

Concentrated Load is one that is localized over a shorter than normal distance and imposes greater stress in the concentrated load areas. Under these conditions, it is not recommended to carry the full rated capacity of the trailer. Extreme concentrated applications may require additional support for the load.

1.4 Vehicle Load and Handling Limits

Vehicle handling limits can be greatly affected by the weight of a load, its placement, the amount of weight distributed over the axles and whether or not the load is secured properly.

Tow vehicle and trailer combinations are designed to provide maximum directional control and roll stability within the constraints of highway size and weight limits. Any combination can be rolled over by driving too fast around a curve, making too abrupt a maneuver, or by leaving the roadway. Locking up the wheels on an axle can result in a jackknife or trailer swing out.

One of the major contributing factors to vehicle rollover is high center of gravity on tall loads. Extreme caution should be used in maneuvering a vehicle and trailer combination, or any unit that has a tall load. Positioning the load in a central side to side location will
enhance directional control, roll stability and braking.

You should be aware that trailers with a shorter wheel base are more prone to roll during an abrupt lane change or quick reactions at the wheel. This tendency can be made dramatically worse with a tall, high center of gravity load.

Overloading a vehicle should never be permitted. Overloading results in tire blowouts, spring breakage, frame damage, diminished braking capacity, and will severely alter the vehicle's normal handling characteristics. All vehicles are designed with a maximum load capability. To best utilize these vehicles in the safest manner the loads as shown on the certificate label should not be exceeded.

Adequate tongue weight is required for trailers to tow correctly. Inadequate tongue weight can cause a "whipping action" particularly in shorter wheel base trailers. Too much tongue weight can overload tow vehicle hitch resulting in reduced steering load and loss of steering control. Selecting the correct tow vehicle is crucial for the application.

Always maintain enough braking and stopping distance. Erratic or unequal brake action from side to side on either tow vehicle or trailer can cause handling problems in braking situations. A balance between tow vehicle and trailer on brake application and release timing and synchronized pressure will reduce push/pull characteristics which when excessive, may result in jackknife. The use of properly matched brake lining is recommended to enhance safer braking.

Proper alignment of both tow vehicle and trailer wheels will add significantly to the handling characteristics of the combination and allow the driver to utilize all the design responses of the vehicle to make evasive maneuvers in the safest manner.

Irregular terrain, steep grades and crowned roads, especially rural roadways, freeways, exit ramps, curves, bumps and depressions introduce forces into a tow vehicle/ trailer combination that could result in an accident if proper precautions and driving techniques are not followed. Even a vehicle that meets all maintenance and load requirements can become hazardous when excessive speeds and certain roadway characteristics are combined.

While on a downgrade, the force of gravity works against the driver in maintaining control of the vehicle, particularly if the road surface is wet or slick from snow and ice or loose material. On upgrades, the problem is spinning out due to insufficient traction at the drive wheels, particularly on snow and ice.

Great care must be taken to avoid excessive use of brakes on long downgrades. Overheated brakes are dangerously inefficient. It is very dangerous to brake on a downgrade using only the trailer brakes. If this is done, the trailer brakes heat up and fade and the tow vehicle brakes alone will not be able to stop the combination by themselves. Drivers should reduce speed, downshift and use engine compression as the principal means of controlling speed on long grades and using all brakes so brake temperatures can be held to a safe level.

Weather conditions can be a major factor in the cause of accidents. Rain, ice, snow, high winds and visibility combined with excessive speed, sudden lane changes, or other factors that put lateral forces into a tow vehicle trailer combination contribute significantly to an accident.

Slippery roads can increase stopping distances and reduce the ability to control the vehicle. When the road is wet, the available tire/road friction may be half that of a dry road, and icy roads can reduce friction many times over wet roads. If hard braking or rapid acceleration occurs, there may be little or no friction available to prevent tire lateral movement and skidding results.

The driver has a responsibility to compensate for the characteristics and conditions of his vehicle, the road conditions and weather. Reducing speeds and increasing attentiveness may compensate for most of these conditions. The more familiar the driver is with the vehicle and the road, the less likely he will need to make abrupt emergency maneuvers which will take the vehicle to its limits. Control and stability may be maintained if the driver knows his vehicle, his load, and the road.

Either braking or accelerating while cornering can significantly reduce the controllability and stability of the vehicle and should be avoided. The best driving practice is to decelerate to a safe conservative speed before entering a corner or approaching congested traffic and then apply only moderate power until an essentially straight path has been established.

It is imperative that a safe speed always be maintained. The safe speed is that speed at which control can be maintained over the vehicle at all times. This speed will allow an emergency change of lane maneuver, travel off an exit ramp with a tightening radius and recovery from pavement drop-off or wet pavement. This speed will vary from one combination of vehicle to another and takes into consideration such factors as road conditions, weather, traffic, visibility, type of load and experience of the driver.

1.5 Alert Symbols

It is important that you know the meaning of the following symbols that are used throughout this document.

SAFETY ALERT!

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER ***DANGER!***

DANGER! indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING ***WARNING!***

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION ***CAUTION!***

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION ***CAUTION***

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

1.6 Uncaging Air Brakes (for trailers with an Air Brake system)

Air brakes are designed with a safety feature called a spring brake, so that if no air pressure is present in the system springs will apply force to the brake system linkages and apply the brakes. To allow the trailer to be moved during shipping a release tool assembly is installed in each of the spring brake cans to prevent the brakes from being applied. These release tools MUST be removed before the trailer can be put into service.

⚠WARNING ***INOPERATIVE BRAKE SYSTEM!***

The spring brake release tool assemblies must be removed from the spring brake cans before the trailer is put into service. The brake system WILL NOT FUNCTION with the release tools installed, and the trailer will roll freely until they are removed.

To remove the release tool assemblies use the following procedure (see illustration on next page):

1. Hook up trailer to tow vehicle, and/or put air to the air brake system on the trailer.

2. Apply approximately 70 psi of air pressure to the brake system; this should be sufficient to remove the spring pressure and loosen the release tool assemblies. NOTE: The release tools can be removed without applying air pressure to the brake system, although the removal process is easier if air is applied.

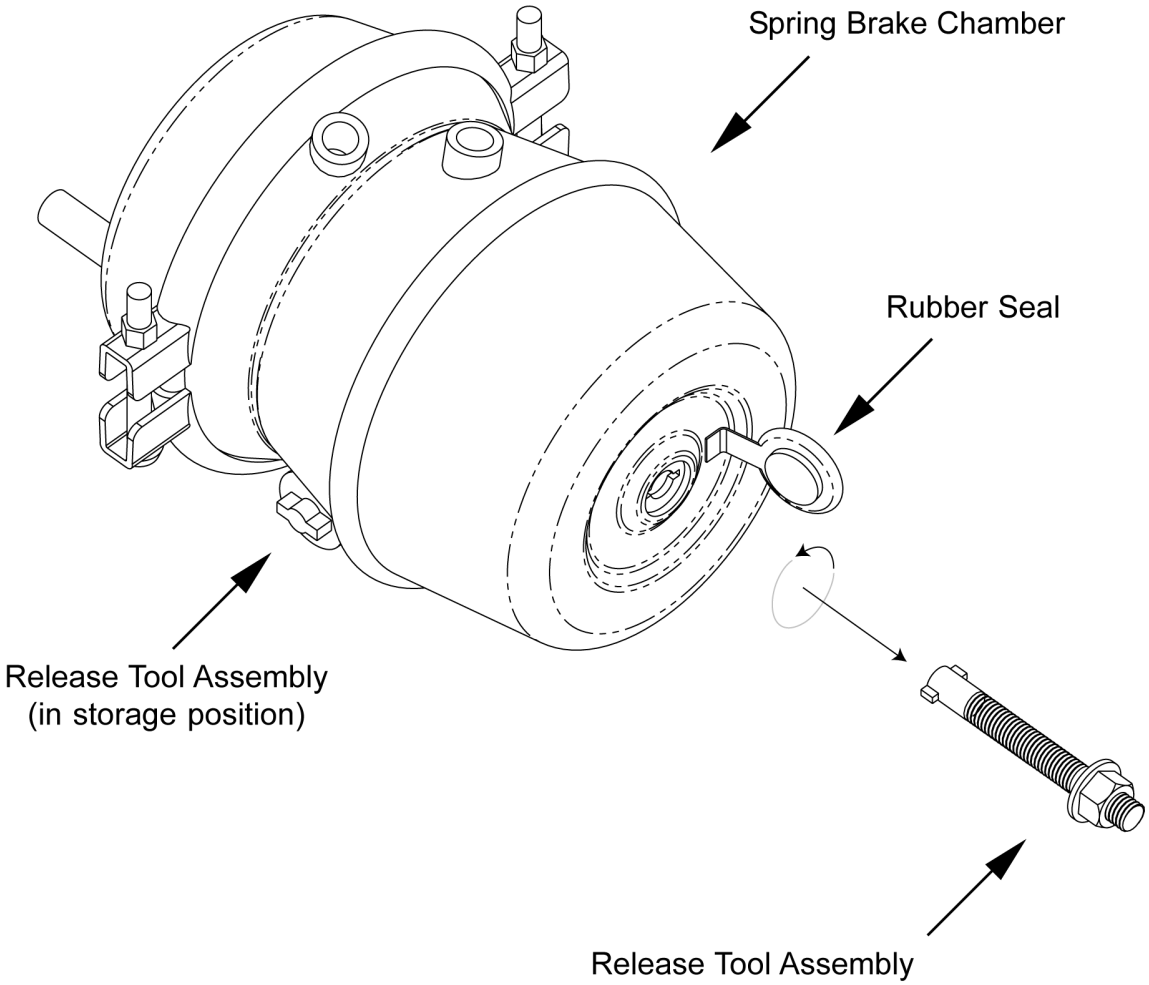
3. Slowly loosen the nut on the release tool until the spring pressure has been released.

4. Rotate the release tool approximately **1/4** turn to align the tee with the slots and pull out.

5. Install the release tool assembly in the storage position on the bottom of the can for future use.

6. Cover the release tool assembly port with the attached rubber seal.

7. Repeat this procedure for all spring brake cans.


Spring Brake Chamber
Rubber Seal
Release Tool Assembly
(in storage position)
Release Tool Assembly

1.7 Reporting Safety Defects

If you believe that your vehicle has a defect that could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Gem State Mfg, Inc..

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Gem State Mfg, Inc..

To contact NHTSA, you may either call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153), go to http://www.safercar.gov; or write to:

Administrator
NHTSA
1200 New Jersey Avenue S.E.
Washington, DC 20590

You can also obtain other information about motor vehicle safety from http://www.safercar.gov.

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1.8 Pre-Trip Inspection

There are some items on every vehicle combination that can be and should be inspected prior to every trip that require no special knowledge, training, or sophisticated equipment.

Before beginning a trip, make a thorough visual inspection of the trailer for cracks in the structure, or bent components such as the tongue or frame. Check for any missing fasteners in suspension as well as other areas, and look for broken or bent springs and spring hangers or otherwise damaged components.

Verify that the hitch on the tow vehicle is the correct size and configuration to fit the trailer coupling. The hitch must be rated to meet or exceed the Gross Vehicle Weight Rating (GVWR) of the trailer.

Check the hitch height of the trailer and compare it to the tow vehicle; it is very important that the trailer be towed in the level position when loaded. In order to achieve the correct hitch height, elevate the tongue of the trailer slightly (1" to 2") by adjusting the trailer hitch to compensate for settling of tow vehicle springs when loaded.

Always visually inspect hitch for unusual appearances such as bent components, cracks in welds or chipped paint where stress cracks may appear from high loads.

Check tires for proper inflation. Tire manufacturers recommend checking inflation pressure while trailer is not loaded and tires are cool. This will provide a more accurate reading. A drop of 10 PSI in tire pressure can reduce the carrying capacity of the tire as much as 20%. This reduced capacity could cause tire failure and poor tire life.

Maintaining proper wheel nut torque value is essential to prevent wheel end separation or potential damage to the hub or wheel. Always check wheel nuts every 50 to 100 miles for the first 200 miles of operation, then periodically thereafter. The same procedure should be repeated after dismount and remount of wheels. It is important to follow the specified tightening sequence recommended in the tire maintenance section of this manual.

Note: For trailers with hydraulic surge brakes, check the brake fluid reservoir level, and add fluid to the fill line if necessary.

1.9 Hook-Up Procedures

⚠WARNING ***TRAILER HOOK-UP***

The consequences of not properly hooking the trailer to the tow vehicle can be very serious. Failure to adhere to information in this section could lead to the trailer becoming detached, the trailer brakes and/or lights not working correctly, or other unsafe situations which could result in an accident causing property damage, bodily injury or death.

Connect the tow vehicle to the trailer and check that the coupler is completely latched. Be sure that a safety pin is inserted to ensure coupler will not unlatch during transport.

Connect the electrical plug from the trailer's harness to the receptacle of the tow vehicle. Check all lights on the trailer to make sure they are working correctly with the tow vehicle's electrical system.

Be sure the landing leg and drop foot are fully retracted and the crank handle is stowed in transport position. For trailers with 2-speed jacks, use low gear for raising and lowering the jack under load, and high gear for raising and lowering the leg when it is off the ground.

Check all safety chains and their attachment to both the trailer and the towing vehicle. Connect safety chains to tow vehicle using crossed pattern under tongue. Allow slack for turning, but avoid having chains drag on pavement. Make certain that all attachment devices are properly installed and in good working order.

For trailers with air brakes, connect the Glad Hands (one service and one emergency) to tow vehicle. Shut off petcock(s) on air tank(s) or if already shut, open to exhaust all moisture, then shut off. It is very important that the air system be drained of moisture after each use to keep all components functioning properly and to make equipment safe.

Trailers with hydraulic surge or electric brakes come equipped with an emergency breakaway device. The breakaway system is designed to operate after the coupling system has failed. Connect breakaway cable S-hook to bumper or hitch on tow vehicle. Allow slack for turning, but avoid letting the cable drag on pavement. Provide as straight a connection as possible. **The breakaway system is for emergencies and is not a parking brake**.

Always check that trailer brakes are working properly. If trailer is equipped with electric brakes, use brake controller to adjust for load.

The following paragraphs pertain to trailers with hydraulic surge brakes:

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The 'surge' or 'push' of the trailer toward the tow vehicle when the tow vehicle brakes are applied actuates the trailer brakes. Excessive surge actuator travel (over one inch) when brakes are applied indicates a need to adjust the trailer brakes.

Should the breakaway be accidentally applied while unhitching, pry the breakaway locks apart to release lever.

Sway control devices that restrict operation of the actuator cannot be used. The actuator must be free to telescope in response to braking requirements

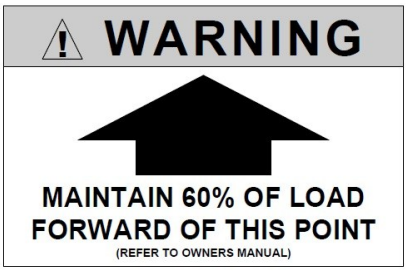
1.10 Loading and Unloading

⚠CAUTION ***TRAILER LOADING PRACTICES***

The consequences of ignoring proper trailer loading practices can be very serious. Failure to adhere to the information in this section could lead to unsafe handling, diminished braking capacity, or other unstable trailer characteristics which could result in an accident causing property damage, bodily injury or death.

It is the operators responsibility to take whatever steps necessary to load the trailer properly, even when it is not easy to calculate the total load or determine the load center of gravity.

A decal on the trailer similar to the one shown below indicates the correct placement of the load. Load the trailer so that 60% of the total load weight is forward of the arrow, and 40% is rearward of the arrow. This will ensure that the proper load balance and tongue weight are achieved.



⚠CAUTION ***ADVERSE WEATHER CONDITIONS!***

Adverse weather conditions can cause wet and slippery trailer decks and ramps. Depending on the type of equipment and typical weather conditions it may be necessary to add traction aids to the trailer deck and ramps.

Always use extreme caution when loading and unloading equipment on trailer. Make sure road surface is level. Loading and unloading on an uneven surface may cause damage to the trailer frame and create unsafe loading conditions.

Always set brakes on tow vehicle and trailer before loading and unloading and use chock blocks as an added safety precaution.

Before securing equipment, always lower booms, loaders and buckets. The parking brake on the equipment being transported must be engaged, where applicable. Always make sure you are under the maximum allowable height clearance.

Equipment with crawler tracks as well as wheel type equipment should be restrained in the lateral, forward, rearward and vertical direction using a minimum of four direct tie-downs and binders each having a working load limit of at least 5000 lbs. and should be blocked to prevent forward movement.

Articulated vehicles shall be restrained in a manner that prevents articulation while in transit.

Trailers With Ramps

Loading ramps can be adjusted for various track widths. Prior to loading or unloading it is very important that ramps are adjusted to proper spacing for equipment being transported. When loading equipment onto deck, drive slowly forward until appropriate tongue load is achieved. Ramps are designed to support rear of trailer during loading and unloading. Ramps must be in stored position during transport.

Trailers With Power Ramps

Prior to lowering power ramp, ensure there is proper room to fully extend ramp and load/unload equipment safely. Make sure latches have been unlatched from both sides of the ramp and that all personnel are clear prior to extending ramp. When loading equipment onto deck, drive slowly forward until appropriate tongue load is achieved. Not enough tongue weight can result in swaying of trailer, which can be an unsafe condition.

The power ramp is designed to support the rear of the trailer during loading and unloading. Deck latches are designed to be adjustable to keep deck tight and rattle free. Ramp must be in stored position during transport.

Trailers With Tilt Decks

It is very important that the deck latch is in the locked position with the safety pin inserted at all times during transport. Always unlock deck when unloading equipment. Failure to do this may result in damage to deck. Deck latch is adjustable to keep deck tight and rattle free.

When loading equipment onto deck, drive slowly until deck begins to tilt closed, and proceed forward until 10% of load weight is on the hitch of trailer. Not enough tongue weight can result in swaying of trailer, which can be an unsafe condition. When unloading use reverse procedure as loading. Back up slowly until deck begins to tilt, stop and wait for deck to completely open, then proceed to back off slowly.

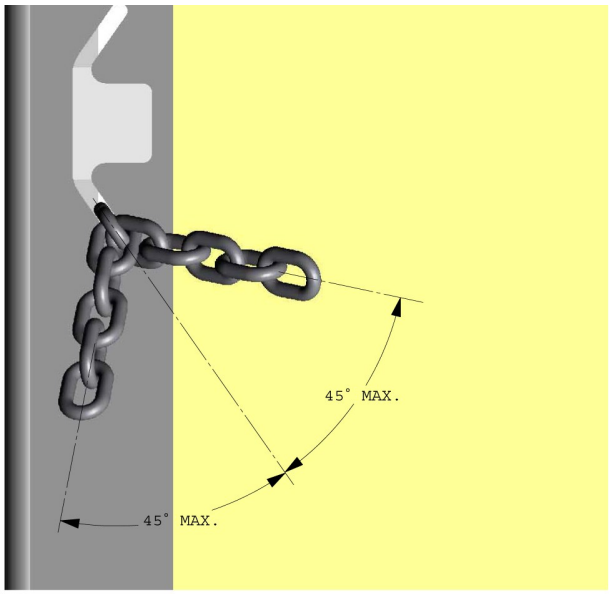
Trailer deck will tilt open and tilt closed with one persons weight. The deck may tilt faster or slower depending on outside temperature, because the temperature affects the density of the fluid in the deck cylinder.

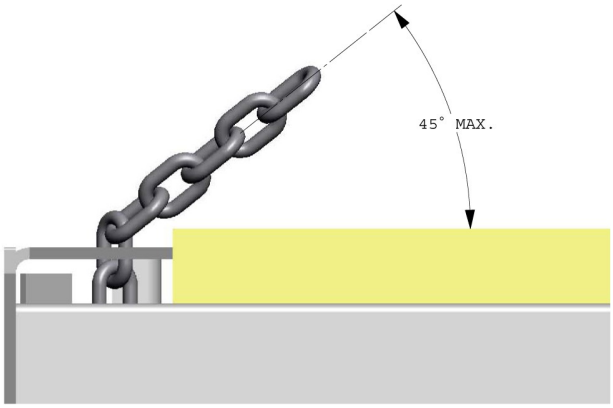
Securing Loads with Chains

NOTE: Only 5/16” or 3/8” Grade 70 Transport Chains are to be used with chain slots.

When securing loads with chains, the chains should not exceed angles shown in illustrations below.

Viewd from above, chain should not be angled more than 45 degrees in either direction of chain slot. In addition, chain should not be angled more than 45 degrees above the trailer floor.





Section 2 Maintenance

2.0 Periodic Maintenance

New Trailer Break-in

- ✓ 50 to 100 miles- re-torque wheel flange nuts- see page 30.
- ✓ 1000 miles- check axle alignment and re-torque suspension fasteners- see page 22-24.

Pre-Trip Inspection

- ✓ Lube wear areas on hitch.
- ✓ Examine frame and tongue members for evidence of damage or cracked welds.
- ✓ Check suspension for bent or broken springs, damaged components, and loose or missing fasteners.
- ✓ Check wheel hub oil levels and for evidence of leaking wheel seals.
- ✓ Check tire inflation pressures- see page 31.
- ✓ Check hitch for damage or stress and verify correct hitch height.
- ✓ Check lights for correct operation.

Quarterly or 10,000 miles

- ✓ Check wheel flange nut torques- see page 30.
- ✓ Check brakes for adjustment- see page 28 & 34.

Semi-Annually or 25,000 miles

- ✓ Lubricate jack- see page 19.
- ✓ Re-torque suspension fasteners- see page 22-23.
- ✓ Inspect and lubricate brakes and linings- see page 28 & 34.
- ✓ Lubricate tilt deck hinges- see page 19.
- ✓ Replace wheel bearing lubricant (heavy duty/off-road service)- see page 28.

Annually or 100,000 miles

- ✓ Replace wheel bearing lubricant (standard duty service)- see page 28.

Special-

- ✓ Accident or Overload- check all structural components for damage. Check tires and wheels for damage. Check axle alignment.
- ✓ Rear Impact- check impact guard components for damage- see page 20.
- ✓ Skidding- check tires for flat spots.

2.1 Structural Components

Sub-Frame

Other than for periodic or special inspections the trailer sub-frame requires no regular maintenance other than washing. Keeping the trailer clean will help you notice other things such as cracked welds or corrosion. If your application requires the hauling of corrosives then frequent washdowns are very important.

Deck

The deck is the major load-carrying member of the trailer. It requires no regular maintenance other than a periodic check for broken welds, loose fasteners and corrosion. If the trailer has been overloaded or in an accident, inspect the tilt deck carefully.

It may be necessary to apply a new coat of wood preservative after decking has aged and become dry. The best time to apply preservative is during warm weather for better penetration. Replace decking when necessary. Occasionally check for loose, missing, or broken deck screws.

Rubber compound decking material (if applicable) requires no particular maintenance.

2.2 Sub-Assembly Components

Pintle Eye or Ball Type Coupling

Check for cracks, loose fasteners and wear. Regularly apply a coating of grease to the contact areas to prevent accelerated wear.

The fasteners are very important and deserve careful attention. Replace the bolts if they are damaged in any way, and replace the locknuts if worn. Torque the fasteners to 315 to 420 lbs.-ft.

King Pin

Check the king pin for cracks, wear and/or damage. Regularly apply a coating of grease to the fifthwheel to prevent accelerated wear. Always ensure fifthwheel is completely latched before transport.

Jack Assembly

Every six months, lubricate the jack in the following manner:

1. Extend the leg approximately 2 inches from the fully retracted position.

2. Add **1/4** pound molybdenum grease (with a temperature rating suitable for your operating conditions) to each of the grease fittings. For 2-speed jacks there are two on the gear leg, one on the swivel pad and one on the gear box. For single speed jacks there is one on the gear leg and one on the swivel pad.

The following three sub-sections pertain to trailers with tilt decks

Cushion Cylinder

The fluid in the cylinder should be changed if the cylinder has leaked or if the deck action has become jerky or sluggish. Fully collapse the cylinder, and then remove the filler plug and drain out the old fluid. Add 10W hydraulic fluid until the cylinder is full and all the air has been expelled.

Deck Latch

The latch assembly is designed with replaceable, self-lubricating bushings at the wear points. See the appropriate pages of the Parts section of this manual for further information.

Should the deck develop a rattle, adjust the hook receiver assembly on the tilt deck.

Deck Hinge Assembly

The hinge assembly is highly stressed during loading and unloading, so check it for cracked welds frequently.

Every six months, or sooner if service dictates, grease the deck hinges. Apply grease to the fittings (one per side) until fresh grease becomes visible.

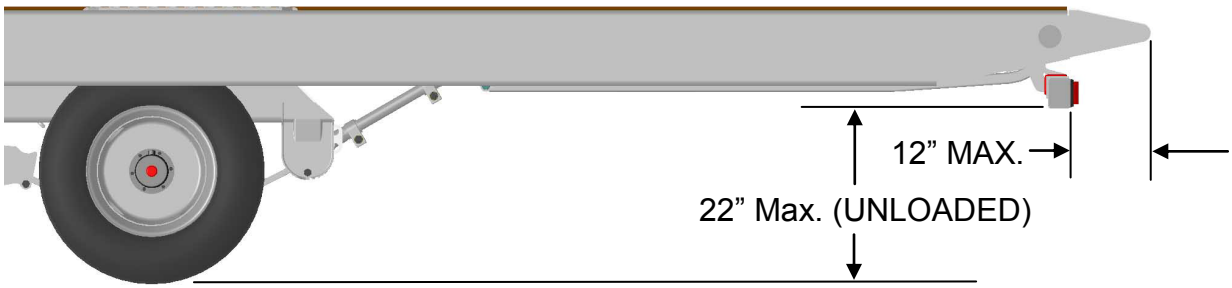
2.3 Rear Impact Guard (RIG)

Your trailer may be fitted with an energy absorbing RIG system that retracts automatically when the deck is tilted for loading and unloading. Normally the RIG requires no maintenance other than checking for loose fasteners or missing cotter pins.

In the event of a rear impact to the trailer, check the RIG system thoroughly for bent or damaged components. There are two sacrificial elements in the system called crush blocks that are intended to deform while absorbing the forces of an impact. If they show any signs of deformity from having been impacted by the RIG pivot arms, they should be replaced immediately. In no case should the crush blocks be 'straightened' or repaired in any way; they both must be REPLACED if deformed by the RIG pivot arms.
Also check the deck beam flanges that the crush blocks bolt to for damage or bending. The flanges may have to be straightened if the impact was particularly severe.

Other areas to check include cracked welds, damaged lighting or electrical harness, bent hinge tube or hinge pin, bent retraction push rod, and bent or broken pivot pins and fasteners. If, after impact, the RIG does not hang normally from the trailer deck and no other damage can be found, it is possible that the torsion block assembly has been overstressed and should be inspected and replaced if necessary.

As a last check, tilt the deck while observing the RIG and make sure that it retracts and extends normally.



The above illustration shows the typical dimensions for a properly located Rear Impact Guard

2.4 Running Gear

Suspension

The suspension on your trailer is either a rubber torsion axle type, slipper leaf spring type, or a heavy duty, leaf spring, underslung type. Rubber torsion suspensions require no maintenance. The leaf springs are not directly attached to the trailer, but are free to float against the wear pads of the hangers and rockers. Spring seat adjusters or adjustable radius rods are employed to keep the axles in alignment.

The first maintenance check should be performed after an initial break-in period of about 1,000 miles. A visual inspection of all suspension components and attachment welds should be performed to reveal any obvious problems, such as cracks or unexpected wear.

During this 'walk-around', it is essential to also check the torque on all suspension fasteners. In the course of the initial 'shake down' period in which the components of the suspension system 'seat in', as much as 25% of the original clamp load on the bolted joints can be lost. After the parts of the suspension have worked together for a very short period of time, re-torquing the bolts is necessary to insure that undue movement, which results in excessive suspension wear, does not occur.

During the first maintenance check, the trailers axle alignment should be examined and adjusted. Alignment should also be checked following any maintenance or repair procedure performed on the suspension.

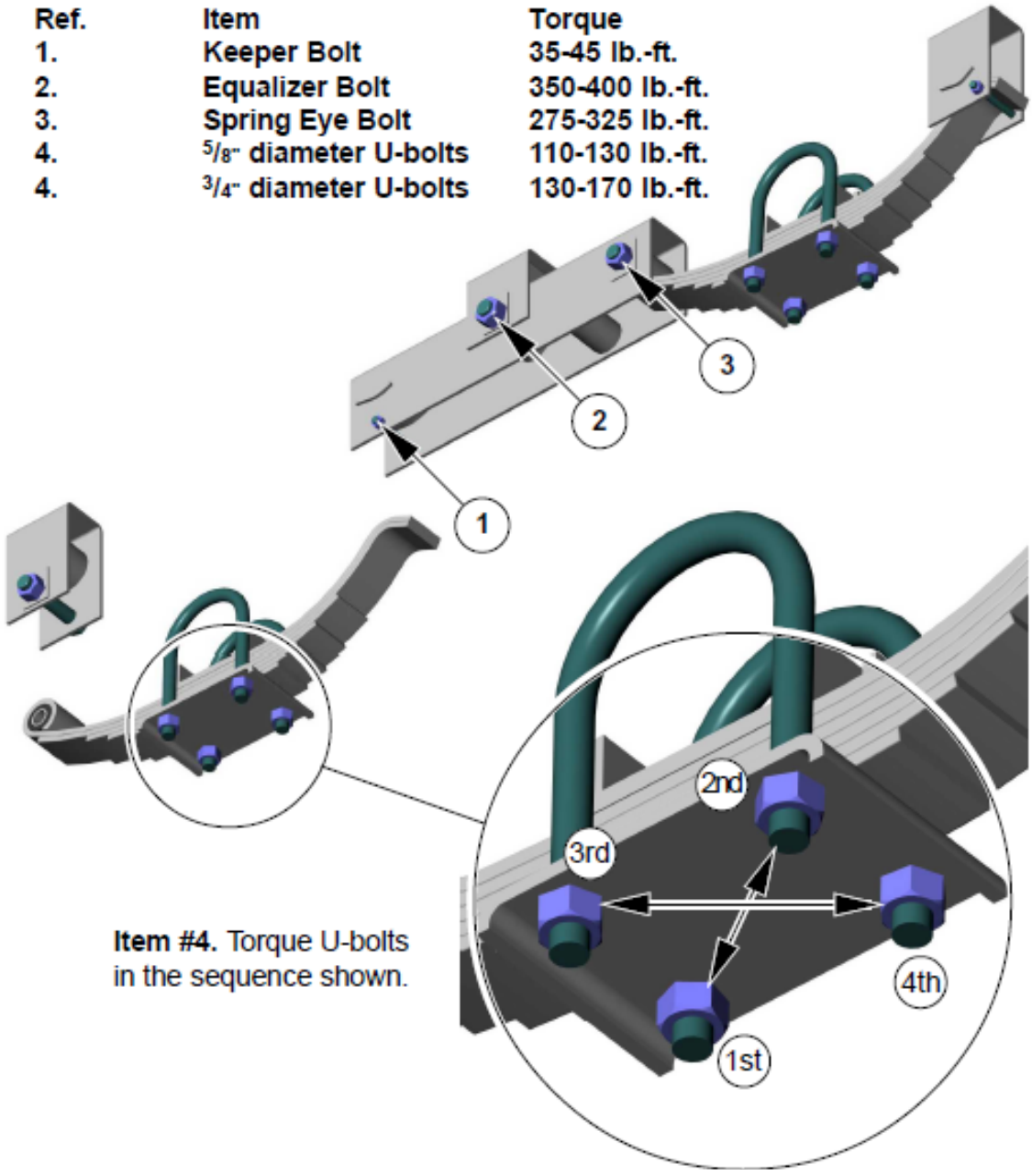
Visually inspect the suspension system every three months or 25,000 miles for signs of excess wear, elongation of bolt holes, and loosening of fasteners. Whenever loose or replaced the fasteners in your suspension system should be torqued as detailed below. The oiled torque values in the first column are for new fasteners with lubricated threads. For maintenance check on fasteners that have been in service use the higher torque values in the dry thread column. It is important that you check all bolts and nuts to insure that the recommended torque values are being maintained.

You cannot ascertain these torques values visually or by 'feel'. USE A TORQUE WRENCH!

⚠WARNING ***TORQUE REQUIREMENTS!***

Follow all torque requirements! Do not use any component with visibly worn or damaged threads. Failure to follow these safety alerts can lead to loss of vehicle control, property damage, serious personal injury or death.

Ref.	Item	Torque
1.	Keeper Bolt	35-45 lb.-ft.
2.	Equalizer Bolt	350-400 lb.-ft.
3.	Spring Eye Bolt	275-325 lb.-ft.
4.	5/8" diameter U-bolts	110-130 lb.-ft.
4.	3/4" diameter U-bolts	130-170 lb.-ft.



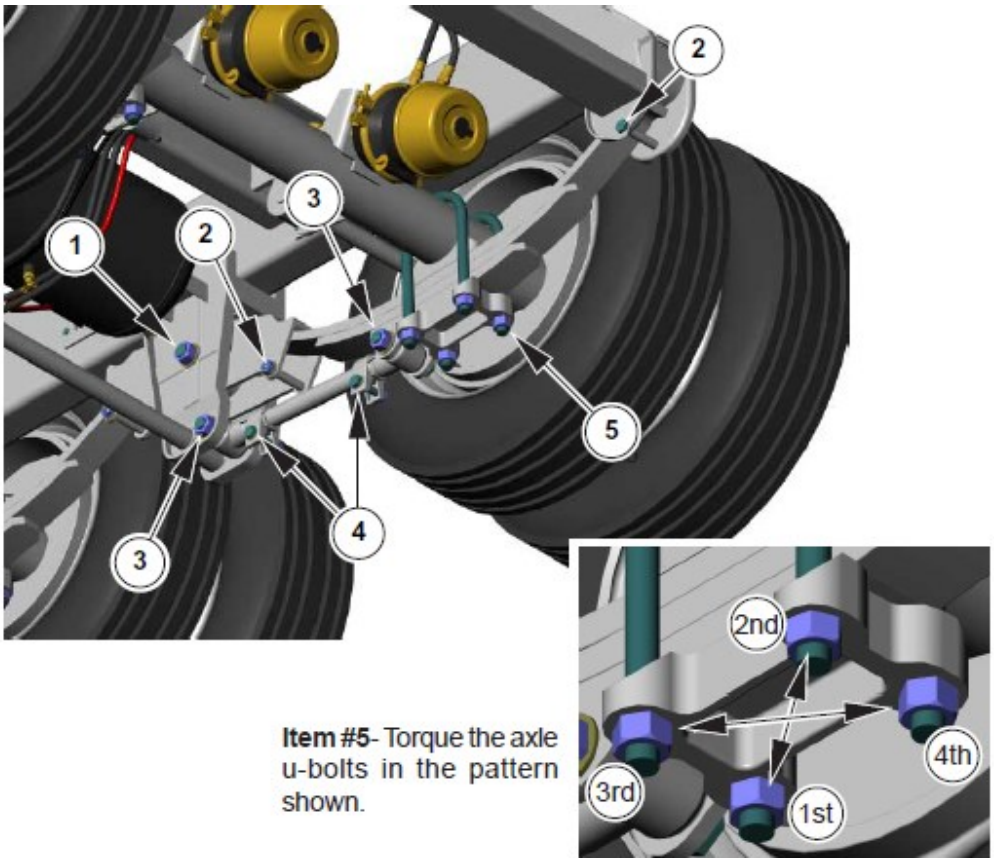
Item #4. Torque U-bolts in the sequence shown.

⚠WARNING *TORQUE REQUIREMENTS!*

Follow all torque requirements! Do not use any component with visibly worn or damaged threads. Failure to follow these safety alerts can lead to loss of vehicle control, property damage, serious personal injury or death.

Item		Oiled Torque	Dry Torque
1. 1 **1/8**" -7	Rocker Bolt*	590 lb-ft	790 lb-ft
2. **5/8**" -18	Spring Retainer Bolt	35 lb-ft	50 lb-ft
3. 1" -14	Radius Rod Bolt	540 lb-ft	720 lb-ft
4. **5/8**" -18	Radius Rod Clamp Bolt	130 lb-ft	170 lb-ft
5. **7/8**" - 14	Axle U-bolt (with pattern)	350 lb-ft	470 lb-ft

***Rocker bolt may be of the 'Huck' type and have a permanent clinch end instead of a nut. If so, no torquing is necessary.

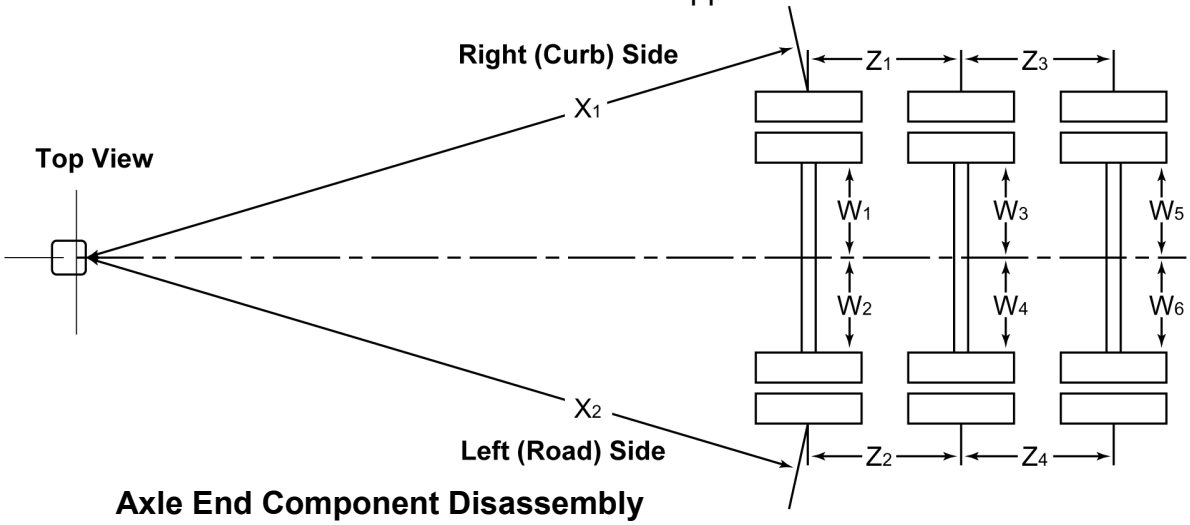


Item #5- Torque the axle u-bolts in the pattern shown.

Axle Alignment

Verify that the forward axle is centered on the trailer; W1 = W2. Check the distance from the coupler or faceplate center to the forward axle end on both sides, and adjust the left radius rod (or spring seat adjusters for slipper type suspension0 if necessary (the right radius rod is of fixed length) so that X1 is equal to X2. Next check the W and Z distances for the second axle, and then do the same for the third axle, if so equipped. Try to hold the measurements to within ± **1/16**".

More detailed information is contained in the supplied axle manufacturers manual.



Axle End Component Disassembly

Whenever the hub equipment on your trailer must be removed for inspection or maintenance refer to the supplied axle manufacturer's manual.

Hub Inspection

Clean the hub with a commercial solvent for inspection. Check for cracks, elongated holes, evidence of overheating or foreign object damage. The hub is crucial to safe vehicle operation and any doubt about its condition should be cause for replacement.

Broken or Damaged Studs

Typically when a stud is damaged it is due to under torque (loose capnuts), over torque, or overloading. Because the studs act together to share the wheel loads, these parameters must be followed:

1. If one stud is broken, replace the studs on either side of the broken one also.
2. If two or more studs are broken, replace the entire set.
3. A stud with damaged threads should be replaced immediately.

Brake Drum Inspection

Clean and inspect the brake drums whenever relining the brakes. To be suitable for further service, the brake drum should pass the following checks:

1. The brake surface should be free of scoring, excessive heat checks and free of cracks.

2. The brake surface diameter should be within the maximum diameter stamped on the drum.

3. The mounting holes and pilot must be round and true.

4. The mounting surface must be clean and flat.

⚠WARNING ***BRAKE SYSTEM SAFETY!***

If any of the above conditions are not met, the brake drum should be replaced. Failure to replace the brake drum will result in an unreliable braking system, and may lead to an accident.

It may be desirable to machine the braking surface to remove small heat checks or other surface defects resulting from normal use. The following should be noted when turning the brake drum:

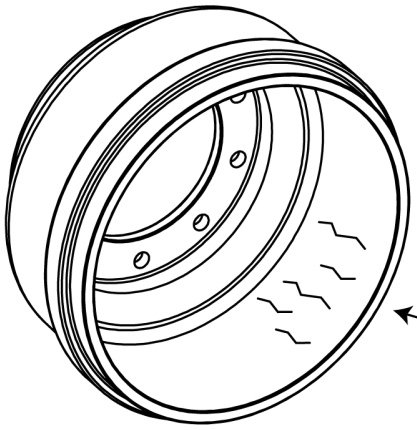
1. The maximum diameter cast into the back plate portion of the brake drum is the discard diameter. If any portion of the brake drum exceeds the maximum diameter it must be replaced.

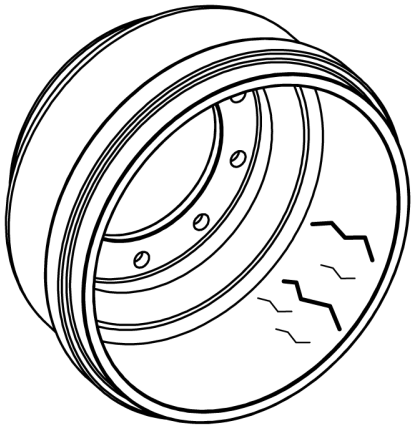
2. When preparing to machine a drum, allow at least .040" under the maximum diameter for further normal in-service wear. Failure to allow for service wear will result in a weakened brake drum and may result in an accident.

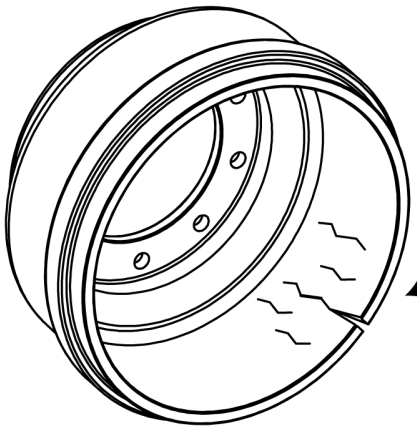
Brake drums should be replaced in pairs to achieve the same braking power on both wheels and maintain even braking load on the axle. Failure to replace both brake drums on an axle will result in uneven braking load on the axle and may significantly reduce the performance, service life and/or safety of your vehicle.

See the brake drum troubleshooting charts on the following pages for more information.

Brake Drum Troubleshooting Chart

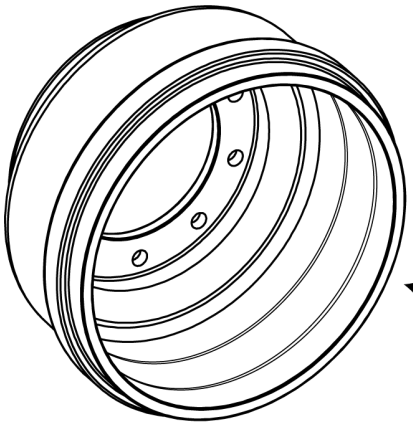


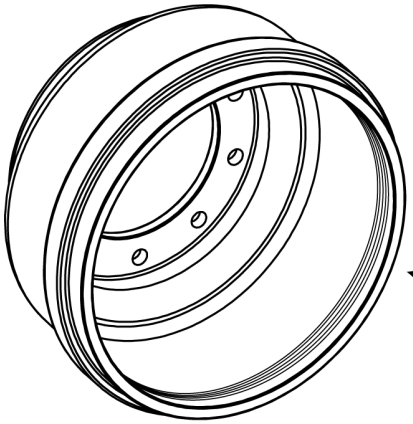


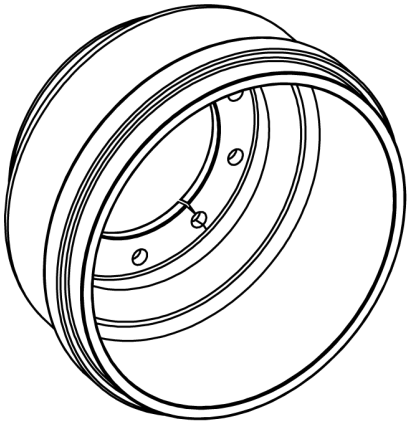


PROBLEM	CAUSE	REMEDY
OIL STAINED DRUMS	LEAKING SEAL	REPLACE SEAL. CLEAN DRUMS & REPLACE LININGS.
LIGHT HEAT CHECK	NORMAL CONDITION	MACHINE
BLUE OR DISCOLORED BRAKE SURFACE	EXCESSIVE HEAT FROM DRAGGING BRAKES OR BRAKE IMBALANCE BETWEEN TRACTOR AND TRAILER	MACHINE BRAKE DRUM. CHECK RETURN SPRINGS AND FOR BINDING BRAKE ACTUATION SYSTEM.
POLISHED BRAKE SURFACE	NON-ASBESTOS LINING	NORMAL CONDITION
	IMPROPERLY CURED BRAKE LINING	MACHINE OR DE-GLAZE WITH EMERY CLOTH
HEAVY HEAT CHECK	IMBALANCED BRAKE SYSTEM, DRAGGING BRAKES, OR DRIVER ABUSE. CAUSED BY CONSTANT HEATING AND COOLING OF BRAKE SURFACE.	REPLACE BRAKE DRUM. CHECK BRAKE BALANCE, BRAKE RETURN SPRINGS, BRAKE ADJUSTMENT, AND LINING TYPE WITHIN VEHICLE COMBINATION.
NOISE, CHATTER, OR PULSATING BRAKE	HEAT SPOTTED, GREASE STAINED, OR OUT OF ROUND DRUM OR LOOSE BRAKE COMPONENTS	CHECK BRAKE DRUM FOR FAULTY CONDITION AND REMEDY AS DESCRIBED IN THIS SECTION
FADING OR WEAK BRAKE	HIGH TEMPERATURES IN BRAKE SYSTEM, IMPROPER ADJUSTMENT, OR INFERIOR LINING.	CHECK BRAKE DRUM, LINING CONDITION, AND BRAKE BALANCE. AVOID CONDITIONS OR LOADS WHICH CREATE HIGH BRAKE TEMPERATURES.
CRACKED BRAKE DRUM	MISHANDLING	REPLACE
	HEAT CHECKS GROW AND JOIN TOGETHER THROUGH DRUM SECTION	REPLACE BRAKE DRUM. CHECK BRAKE BALANCE, BRAKE RETURN SPRINGS, BRAKE ADJUSTMENT, AND LINING TYPE WITHIN VEHICLE COMBINATION.
	IMPROPER SHOE CONTACT	REPLACE. CHECK SHOE CONTACT AREA.

Brake Drum Troubleshooting Chart (continued)







PROBLEM	CAUSE	REMEDY
FINE GROOVES	ABRASIVE FOREIGN MATERIAL OR POOR QUALITY BRAKE LINING	MACHINE OR REPLACE BRAKE DRUM AND REPLACE LINING
	LOOSE RIVETS OR BOLTS OR FOREIGN MATERIAL IN RIVET HOLES	MACHINE OR REPLACE BRAKE DRUM. USE RIVET HOLE PLUGS.
HEAT SPOTTED OR HARD SPOTS IN BRAKE SURFACE	HIGH LOCALIZED HEATING AND COOLING CYCLES	GRIND HARD SPOT AND MACHINE DRUM
EXCESSIVE WEAR	ABRASIVE FOREIGN MATERIAL OR POOR QUALITY BRAKE LINING	MACHINE OR REPLACE
MOUNTING FLANGE SEPARATED FROM HOOP SECTION OF DRUM	INSTALLATION ON DIRTY HUB	REPLACE DRUM. CLEAN THE HUB PRIOR TO INSTALLING NEW DRUM.
	WHEEL HITTING BRAKE DRUM	INCORRECT APPLICATION. REPLACE BRAKE DRUM WITH CORRECT PART.
GROOVES ALONG EDGES OF LINING	ABRASIVE MATERIAL COLLECTING ALONG EDGES OF LINING	DUST SHIELD MAY CAUSE OR CURE THIS. MACHINE BRAKE DRUM.
OUT OF ROUND: CONCENTRICITY	IMPROPER FIT TO PILOT OR IMPROPER SEATING ON WHEEL OR HUB	MACHINE OR REPLACE. CHECK FOR CORRECT FIT & CLEARANCE TO WHEEL.
OUT OF ROUND: VARIATION IN DIAMETER	HEAT DISTORTION	MACHINE OR REPLACE
OUT OF ROUND: BALANCE	BALANCE WEIGHT FALLEN OFF OR NOT A BALANCED DRUM	REPLACE. SPECIFY BALANCED DRUM WHEN ORDERING REPLACEMENT
CRACK BETWEEN PILOT HOLE AND BOLT HOLE	MISHANDLING	REPLACE
	INSTALLATION ON DIRTY HUB	REPLACE. CLEAN HUB BEFORE INSTALLATION.

Axle End Component Cleaning and Inspection

Refer to the supplied manufacturer's manual for specifics.

Axle End Component Assembly

Refer to the supplied manufacturer's manual for specifics.

Wheel Bearing Adjustment

Refer to the supplied manufacturers manual for specifics.

Wheel Bearing Lubrication

Refer to the supplied manufacturers manual for specifics.

2.5 Wheels and Tires

Wheels

Wheels are a very important and critical component of your running gear. Inspect them visually for cracks or elongated bolt holes whenever they are removed for any reason. If it becomes necessary to replace the wheels on your trailer, be certain that the replacement units match the originals in the following regards:

1. Type. The disc wheels and capnuts on your trailer are of the hub pilot design.

2. Material. Do not mix aluminum and steel disc wheels or aluminum and steel disc wheel capnuts. This may result in incorrect components being used to secure the wheels, which can lead to loose wheels resulting in a crash.

3. Fit. Use only the correct matched parts when mounting disc wheels. Incorrect components can result in separation of the rim components.

4. Bolt Circle. Many bolt circle dimensions are available and some vary by so little that it might be possible to attach an improper wheel that does not match the axle hub. Be sure to match your wheel to the axle hub.

5. Capacity. Be sure your wheels have enough load carrying capacity and pressure rating to match the maximum load of the tire and trailer.

6. Offset. This refers to the relationship of the center line of the tire to the hub face of the axle. Care should be taken to match a replacement wheel with the same offset wheel as originally equipped. Failure to match offset can result in reduced carrying capacity of your axle.

7. Rim Contour.

⚠DANGER ***RIM CONTOURS!***

Use only the approved rim contours as shown in the Tire and Rim Yearbook or the tire manufacturers catalog. The use of other rim contours is dangerous. Failure to use the proper rim contour can result in explosive separation of the tire and wheel and could cause a serious accident.

⚠WARNING ***WHEEL MODIFICATIONS!***

Do not attempt to repair or modify a wheel. Even minor modifications can have a great effect. Do not install a tube to correct a leak through the rim. If the rim is cracked, the air pressure in the tube may cause the pieces of the rim to explode with great force and can cause serious injury or death.

Wheel Torqueing Procedures

When installing the wheels, make sure that the hub and wheel mating surfaces are clean and free of rust, dirt and excess paint. The studs and threads must be clean, dry and in good condition for applying installation torque.

The hand torque wrench or air wrench used to install the wheels must be periodically calibrated to insure proper applied torque. Adjust the tools as necessary.

Position the disc wheel over the studs, being careful not to damage the stud threads. Make sure the disc wheel is flat against the mounting surface and there is clearance between the disc wheel taper and the brake drum.

On applicable models position the outer disc wheel over the inner disc wheel being careful not to damage the threads on the studs. Be sure the valve stems for both the inner and outer tires are accessible.

Install the flange nuts and tighten to the Stage 1 torque value in the following chart using the sequence shown, and then tighten the flange nuts to the Stage 2 torque value (if applicable) and then the full Stage 3 torque value in sequence.

See manufacturer's "Operation Maintenance Service Manual", for the proper torque specifications.

Tires

Before mounting tires onto wheels make certain that the rim size and contour is approved for the tire as shown in the Tire and Rim Association Yearbook or the tire manufacturers catalog. Also make sure the tire will carry the rated load. If the load is not equal on all tires due to trailer weight distribution, use the tire rated for the heaviest wheel position.

All tires must be matched to within **3/4**" of the same rolling circumference per the tire manufacturers instructions. Do not use tires that fail to meet this criterion. Doing so may result in unstable operation and significantly reduced service life.

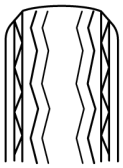
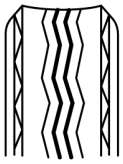
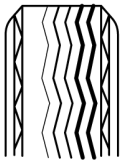
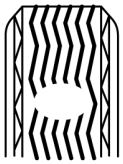
Use tire mounting procedures as outlined by the Rubber Manufacturers Association or the tire manufacturer.

Inflation Pressure

Correct tire inflation pressure is the most important factor in tire life. Inflation pressure should be as recommended by the manufacturer for the load. Pressure should be checked cold before operation. Do not bleed air from tires when they are hot. Check inflation pressure weekly during use to insure the maximum tire life and tread wear. Use the tire wear diagnostic chart to help you pinpoint the causes and solutions of tire wear problems.

NOTE: Tire wear should be checked frequently because once a wear pattern becomes firmly established in a tire it is difficult to stop, even if the underlying cause is corrected.

Tire Wear Diagnostic Chart

	Wear Pattern	Cause	Corrective Action
	Center Wear	Over inflation	Adjust pressure to particular load per tire catalog
	Edge Wear	Under inflation	Adjust pressure to particular load per tire catalog
	Side Wear	Loss of camber or over loading	Adhere to load limits. Have axle aligned
	Toe Wear	Incorrect toe-in	Have axle aligned
	Cupping	Loose bearing or out of balance	Adjust bearing; balance tires
	Flat spots	Wheel lockup or tire skidding	Adjust brakes; avoid sudden stops

2.6 Electrical

Harnesses and Lights

The electrical harnesses in the trailer run within the frame members and require no maintenance. The oval stop/turn/tail lights and the round clearance lights are all of the sealed type and do not have a separately replaceable bulb. If a light stops working, first check the plug at the light for voltage (with a test lamp or volt meter) to verify that the electrical system is functioning properly. If it is then replace the lamp; if not then troubleshoot the electrical system.

Junction Block

The junction block requires no regular maintenance. If an electrical problem develops, check for corroded or loose terminals.

Electrical Connection

The electrical connection (ie: 7 way plug or receptacle depending on model) should be kept clean and free of dirt. If an electrical problem develops, loosen the cover retaining screw, slide the cover down over the harness, and check the screws that hold the wires for security. Also check for stray or broken strands of wire.

2.7 Air Brake System

This following section applies if your trailer is equipped with an Air Brake system. The front and rear axles (tandem) or center and rear axles (triple) have brake cylinders with spring brake chambers. Vehicle safety is enhanced through the use of an Anti-Lock Braking System (ABS) that controls the brakes on the front axle (tandem) or center axle (triple). Automatic slack adjusters are used so that optimal braking effectiveness is maintained throughout the life of the linings.

⚠CAUTION ***ASBESTOS DUST HAZARD!***

Since some brake shoe friction materials contain asbestos, certain precautions need to be taken when servicing brakes:
1. Avoid creating or breathing dust.
2. Avoid machining, filing or grinding the brake linings.
3. Do not use compressed air or dry brushing for cleaning.
(Dust can be removed with a damp brush.)

⚠CAUTION ***RISK OF PERSONAL INJURY!***

Whenever it becomes necessary to jack the trailer it is up to you to ensure that the trailer or axle is supported securely. Use blocks or jack stands on solid ground, especially if you are going to be working under the trailer.

Preventive Maintenance

1. Every three months or 25,000 miles check the condition of the foundation brakes, including drums, shoes and linings, cams, rollers, bushings, etc.

2. Check for structural damage of the housing, worn clevis, worn clevis bushings and condition of the boots for cuts or tears. Replace if necessary.

3. After allowing the brake drums to cool to room temperature, check for correct chamber stroke as follows:

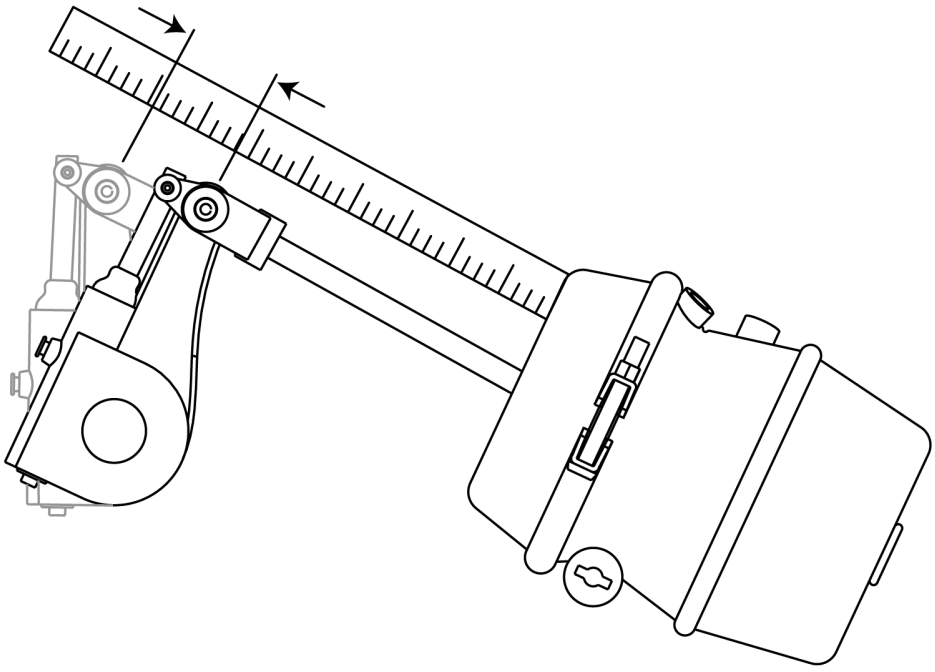
a. Measure the applied stroke. Using a ruler, measure the distance from the face of the air chamber to the center of the large pin in the clevis. (Another method is to mark the shaft where it exits the chamber). Make a 100 psi brake application and allow the chamber pushrod to travel to its maximum stroke. Again, measure the distance from the face of the chamber to the center of the large pin. The applied stroke is the difference between the two measurements. If this distance is less than 2", then the slack adjuster is functioning properly. If the applied stroke is more than 2", proceed with step b.

b. Measure the free stroke. Make the same two measurements as described above for measuring the applied stroke, but instead of air pressure use a lever to move the slack adjuster arm until the brake shoes contact the drum. This distance should be between **1/2**" to **5/8**".

If the free stroke is good but the applied stroke is too long then there is a problem with the foundation brake. Check the foundation brake for missing or worn components, cracked brake drums, or improper lining to drum contact.

If the free stroke is less than **1/2**", then a dragging brake can occur. Readjust the slack adjuster manually as described below.

If the applied stroke is good but the free stroke is greater than the recommended distance (**1/2**" to **5/8**"), then a function test of the slack adjuster should be performed as described below.



Manual Brake (Free Stroke) Adjustment

⚠CAUTION ***DISENGAGING THE PAWL!***

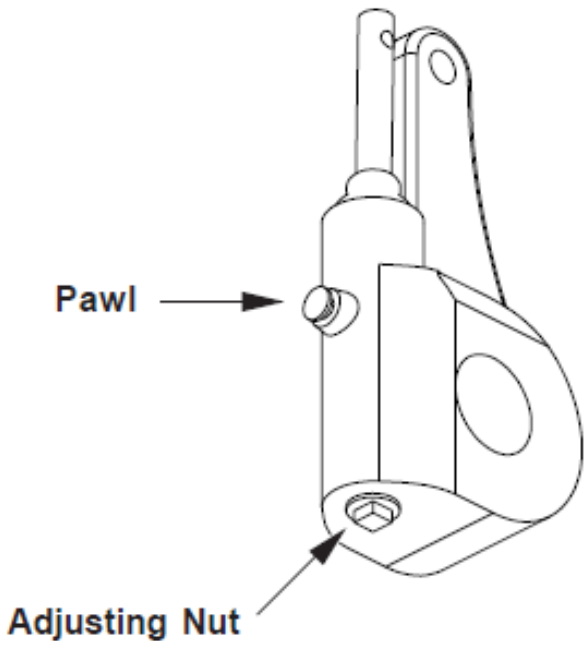
You must disengage a pull pawl or remove a conventional pawl before rotating the manual adjusting nut, or you will damage the pawl teeth. A damaged pawl will not allow the slack adjuster to automatically adjust brake clearance. Replace damaged pawls before putting the vehicle in service.

1. Disengage a pull pawl or remove a conventional pawl. The pull pawl can be disengaged by prying up on it with a screwdriver at least **1/32"**.

2. Turn the adjusting nut in the counterclockwise direction until the linings touch the drum, and then turn the adjusting nut in the opposite direction (clockwise) **1/2** turn.

3. Repeat the free stroke measurement procedure. If it is necessary to adjust the stroke, turn the adjusting nut **1/8** turn clockwise to lengthen the stroke, or **1/8** turn counterclockwise to shorten the stroke. Repeat these steps until the free stroke length is correct.

4. Release the pull pawl or reinstall a conventional pawl.



Slack Adjuster Function Test

1. Remove the slack adjuster from the axle.

2. Using a torque wrench that measures in lb-in., rotate the adjusting nut counterclockwise 22 turns. This is enough turns of the adjusting nut to rotate the camshaft gear 1 full revolution. If the torque value remains below 25 lb-in. during this test, then the slack adjuster is functioning normally.

⚠CAUTION ***COMPONENT DAMAGE!***

In step 2 turn the adjusting nut in the counterclockwise direction ONLY! If you turn the adjusting nut in the wrong direction while the pawl is engaged, the pawl teeth will be damaged and the slack adjuster will not automatically adjust the brake clearance. Replace damaged pawls before returning the vehicle to service.

3. If the torque value exceeds 25 lb-in. while making the 22 turns, then the slack adjuster is not working correctly and should be rebuilt or replaced.

4. Reinstall the slack adjuster on the axle, and check the free stroke length. Adjust if necessary.

For more information regarding the slack adjuster, refer to Meritor Maintenance Manual 4B, *Automatic Slack Adjuster*.

Brake Lubrication

Every six months or 50,000 miles the brake system should be lubricated with NLGI Grade 1 or 2 lithium base grease. There are three grease fittings for each wheel; one on the slack adjuster, one on the inner cam bushing, and one on the outer cam bushing. Add grease until fresh grease appears at the purge point of the component. Clean up any excess grease thoroughly so that it will not attract dirt or contaminate the brake linings.

For more information regarding brake lubrication, refer to Meritor Maintenance Manual 14, *Trailer Axles,* Section 13.

⚠WARNING ***BRAKE LINING CONTAMINATION!***

Do not get grease or oil on the brake linings or drums.

2.8 Power Ramps

The Power Ramp is designed from quality materials for durable operation. Periodic inspections should occur looking for wear, damage or cracked welds. As an item of routine maintenance apply grease to all grease fittings until fresh grease becomes visible.

See the appropriate pages of the Parts section of this manual for further information regarding replacement parts if needed.

Ramp Latch

Should the ramp develop a rattle while in the stored position, adjust the eyebolt on the Latch Arm. The latch handle should snap down securely against the stabilizer bar and the eyebolt should fit securely against the retaining hook when in the stored position.

Ramp Hinge

Assure that the ramp hinges are free of dirt or debris through regular cleaning or wash downs. Regularly inspect the roll pins at the end of hinges to assure that they are in place There are 4 grease fittings (2 per hinge) .

Ramp Linkages

The ramp linkage points should be kept free of debris to allow for free rotation of the components. Assure retaining clips are in place through periodic inspections.

TRAILMAX®
Quality Trailers From
Gem State Manufacturing, Inc.

Section 3 Parts Manual

Section	Title	Page
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3.1.2	Jack Assembly	3
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3.2	Running Gear	6
3.3	Wheels and Tires	8
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3.4.1	Electrical Plug	9
3.4.2	Electrical Harness	10
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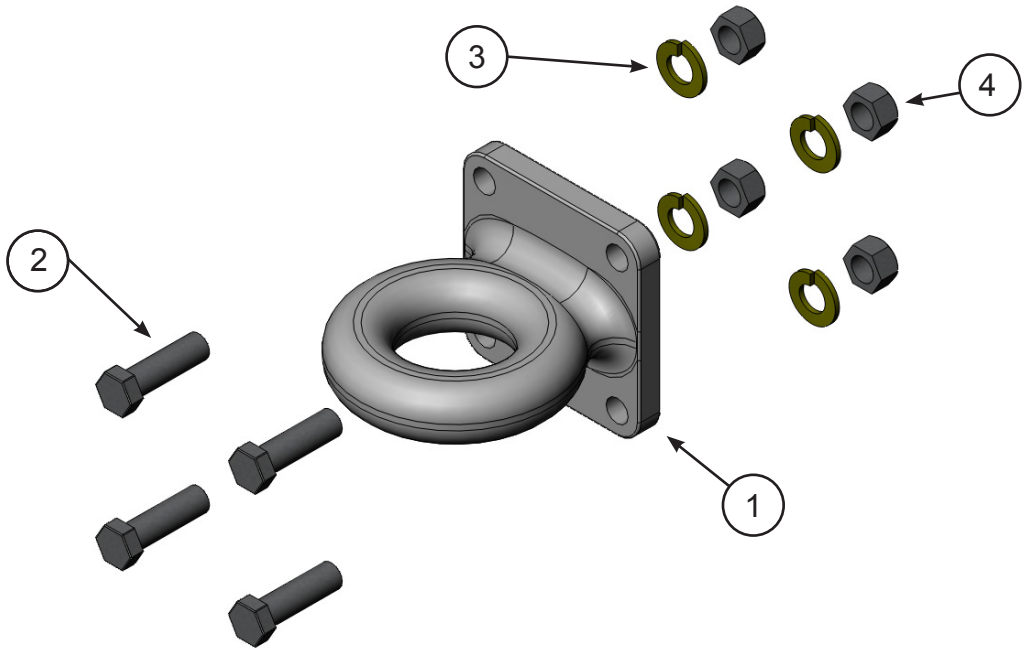
Section 3.1.1 Drawbar Eye

Ref.	Part #	Rev.	Description	Quantity			
				TD-40-FBR	TD-40-FBR (24+6)	TRD-54-FBR	TRD-54-FBR (28+6)
1	Premier 300	-	Drawbar 3” ID 4 Bolt w/ 25/32 holes	1	1	1	1
2	118992	-	3/4-16 x 2.5” Cap Screw Gr. 8, Zinc	4	4	4	4
3	1133632	-	3/4” Lock Washer, Zinc	4	4	4	4
4	1136466	-	3/4”-16 Hex Nut Gr. 8, Zinc	4	4	4	4



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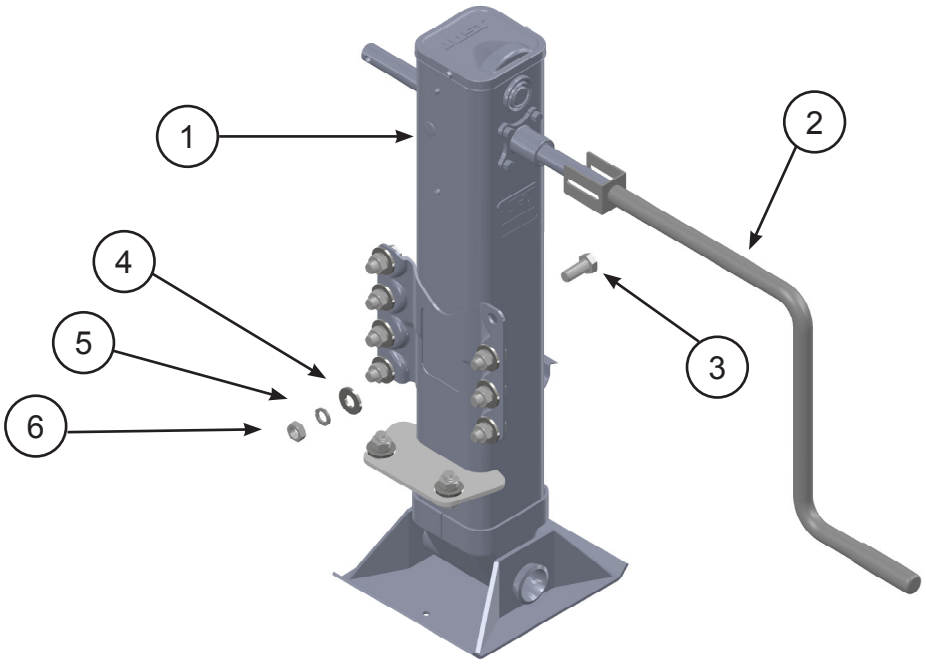
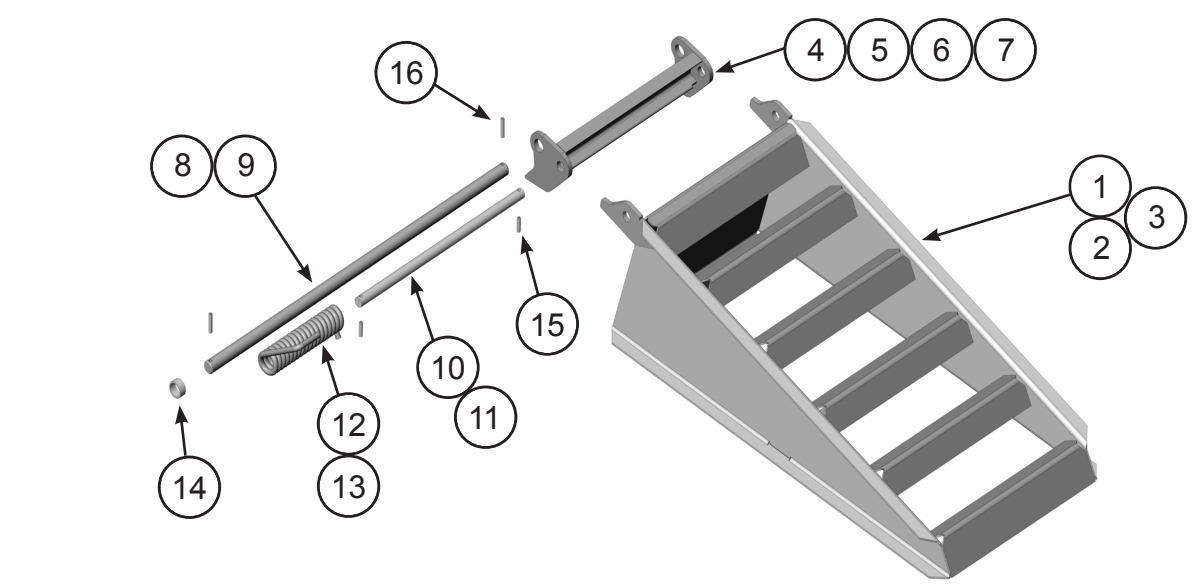
Section 3.1.2 Jack Assembly

Ref.	Part #	Rev.	Description	Quantity			
				TD-40-FBR	TD-40-FBR (24+6)	TRD-54-FBR	TRD-54-FBR (28+6)
1	SA-18110	A	Jack	1	1	1	1
2	C10592.5	-	Crank	1	1	1	1
3	110120415	-	5/8-11 x 1 1/2 Cap Screw Gr. 5 Zinc	10	10	10	10
4	1133863	-	5/8 Flat Washer Gr. 8 Zinc	10	10	10	10
5	1133630	-	5/8 Lock Washer Zinc	10	10	10	10
6	1136314	-	5/8-11 Hex Nut Gr. 5 Zinc	10	10	10	10



Section 3.1.3 Ramp

Ref.	Part #	Rev.	Description	TD-40-FBR	TD-40-FBR (24+6)	TRD-54-FBR	TRD-54-FBR (28+6)
				Quantity			
1	SA-14549	-	Ramp	2			
2	SA-14569	-	Ramp			2	
3	Q5476	-	Ramp (Pair)		1		1
4	SA-08204	-	Mid Hinge bracket	2			
5	SA-09130	-	Mid Hinge bracket			2	
6	SA-18075	-	Mid Hinge bracket		2		
7	SA-18076	-	Mid Hinge bracket				2
8	SA-09071	-	Mid Hinge Pin			2	2
9	C-13127	-	Mid Hinge Pin	2	2		
10	C-09061	-	Ramp Pin			2	2
11	C-13129	-	Ramp Pin	2	2		
12	C-14494	-	Ramp Spring	1	1	1	1
13	C-14495	-	Ramp Spring	1	1	1	1
14	C-14500	-	Spacer	2	2		
15	0166019	-	3/8” x 1 1/2” Roll Pin Zinc	4	4	4	4
16	0166023	-	3/8” x 2” Roll Pin Zinc	4	4	4	4



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Section 3.2 Running Gear

Ref.	Part #	Rev.	Description	Quantity			
				TD-40-FBR	TD-40-FBR (24+6)	TRD-54-FBR	TRD-54-FBR (28+6)
1	GEM001	-	F22S715NWA-21328N-152IMT23-87CAH	1	1	1	1
2	GEM002	-	F22S715NWN-21328N-152IMT23-87CAH	1	1	2	2
3	71500	-	Torque Arm Assy - Non-Adj	2	2	1	1
4	2221501	-	Spring Seat 5RD, 75 HI	4	4	6	6
5	1639804	-	Torque Arm Assy - Adj., 19.25” LG	2	2	1	1
6	1056200	-	Flange Locknut, 1-14 UNS, Gr. F	8	8	12	12
7	71902	-	Hex Bolt, 1-14 UNS x 5	8	8	12	12
8	36500	-	Spring - 3 Leaf Heavy Duty	4	4	6	6
9	781611	-	U-bolt, 7/8 Dia x 5 RD x 12 1/4	8	8	12	12
10	70601	-	Plate, Bottom Att, Cast-Fin	4	4	6	6
11	3500	-	Washer Pl, 15/16 ID xs 1 3/4 OD	16	16	24	24
12	3404	-	Nut, .875-14 UNF, Gr. 8	16	16	24	24
13	1639805	-	Torque Arm Assy - Adj, 20.25” LG			4	4
14	1615801	-	Equalizer	2	2		
15	2482001	-	Equalizer			4	4
16	1615001	-	Hex Cap Screw, 1 1/8”-7UNC x 6.22”	2	2	4	4
17	1115400	-	Locknut, 1 1/8”-7 UNC, Gr. 5	2	2	4	4
18	83700	-	Washer	2	2	4	4
19	75600	-	Tube 3/4 OD x 18 Ga X 3 1/4 LG	4	4	8	8
20	75900	-	Hex Bolt, 5/8-18 UNF x 4 1/2, Gr. 2	4	4	8	8
21	3703	-	Hex Lock Nut, 5/8-18 UNF, Gr. 8	4	4	8	8
22	B2113276X24	-	Spring Brake Chamber	4	4	6	6

Note: Refer to the appropriate supplied manufacturers manuals for information regarding Brakes, Bearings and Hubs, Axle End Components, and Suspension.

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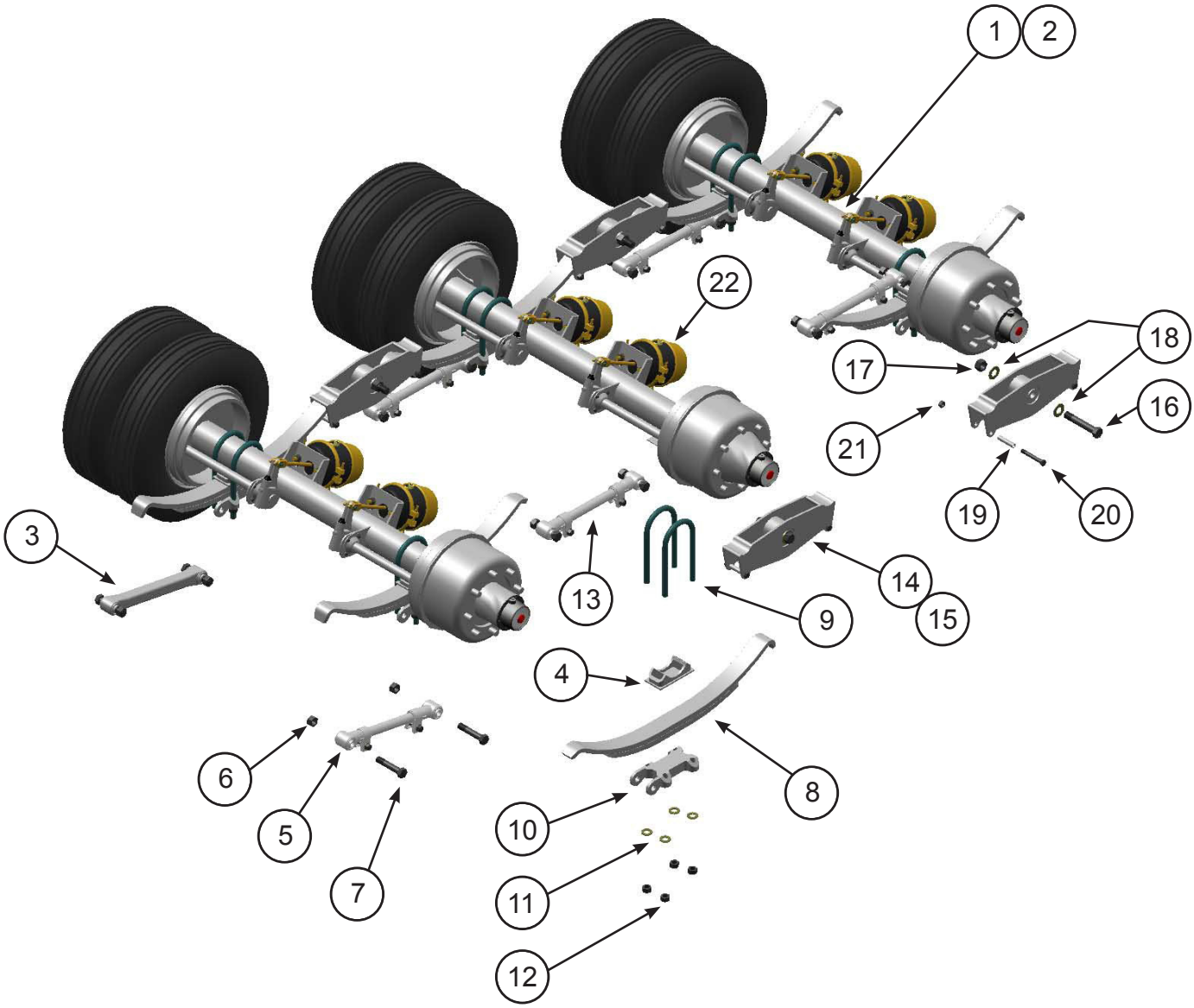
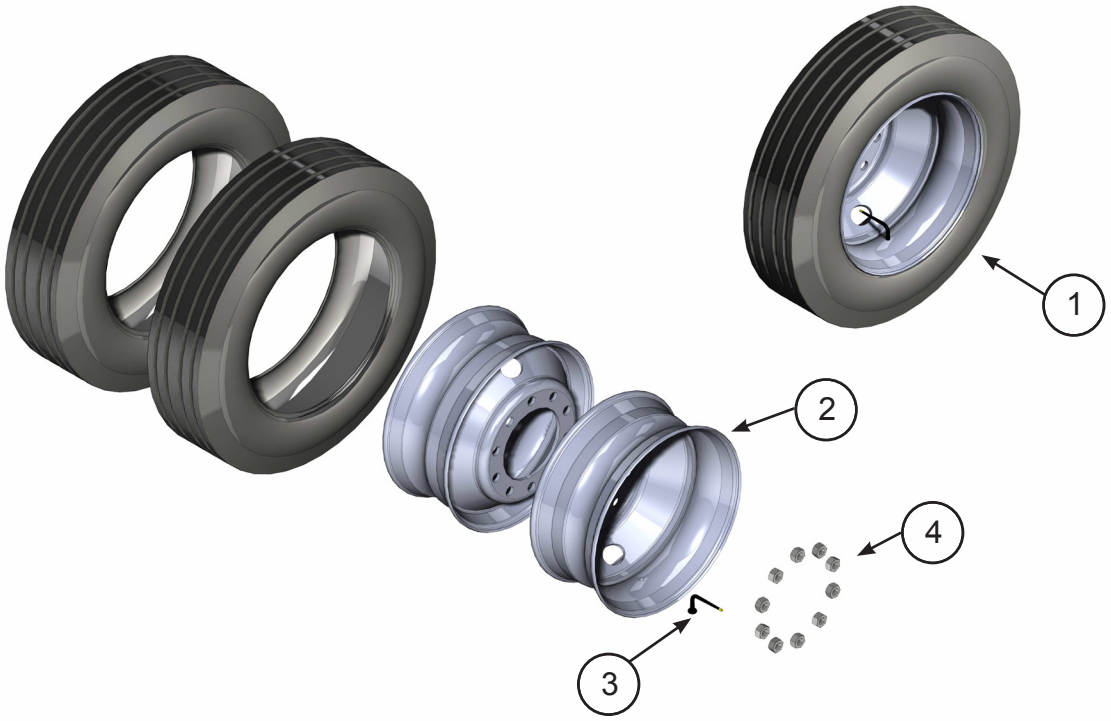
Section 3.2 Running Gear



Section 3.3 Wheels and Tires

Ref.	Part #	Rev.	Description	Quantity			
				TD-40-FBR	TD-40-FBR (24+6)	TRD-54-FBR	TRD-54-FBR (28+6)
1	Y369092	-	215/75R 17.5 on US Wheel rim	8	8	12	12
2	FTW160	-	Wheel, 17.5 x 6.75HC	8	8	12	12
3	TR416	-	Valve Stem	8	8	12	12
4	39702	-	22mm x 1.5 Wheel Nut	32	32	48	48



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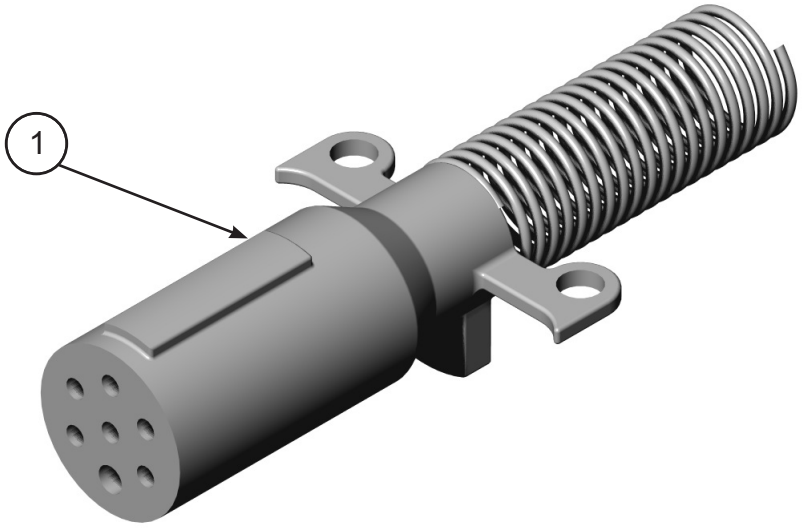
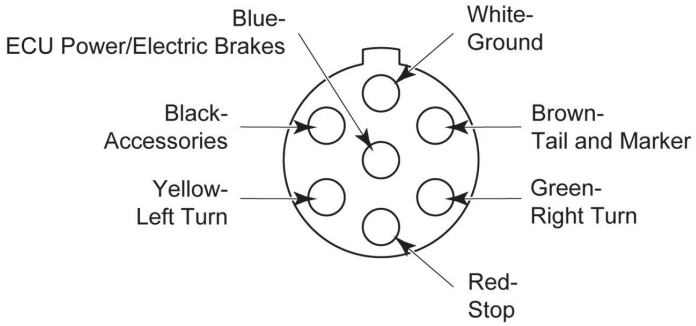
Section 3.4.1 Electrical Plug

Ref.	Part #	Rev.	Description	Quantity			
				TD-40-FBR	TD-40-FBR (24+6)	TRD-54-FBR	TRD-54-FBR (28+6)
1	PL 15-730-250	-	Plug 7-Pin	1	1	1	1





Section 3.4.2 Electrical Harness

Ref.	Part #	Rev.	Description	Quantity			
				TD-40-FBR	TD-40-FBR (24+6)	TRD-54-FBR	TRD-54-FBR (28+6)
1	88776	-	Harn-88, Front Main	1	1	1	1
2	88355	-	Harn-88,M/C 'T' Style 2 PG 140	1	1		
3	88356	-	Harn-88,M/C 'T' Style 10	2	2	1	1
4	88621	-	Harn-88, Main W/ABS And Rcpts	1	1		
5	95582	-	Harn-S/T/T & ID F/Gem State	1	1	1	1
6	52200-0084	-	Harn-SS, ABS FLT Lmp Jmpr-84"	1	1	1	1
7	8820 0096	-	Intermediate Main Extension			1	1
8	88355-0176	-	Harn-88, M/C T Style 2 PG			1	1
9	88356-0072	-	Harn-88, M/C T Style 2 PG 10 72"			1	1
10	88623		Harn-88, Main W/ABS And Rcpts			1	1
	10205R	-	Lmp 2 1/2" M/C RFLX LXN	5	5	5	5
	10205Y	-	Lmp 2 1/2" M/C RFLX LXN	6	6	6	6
	10704	-	GRMT-3" Hole	11	11	11	11
	30700	-	GRMT-Mdl 30	1	1	1	1
	60700	-	GRMT-Mdl 60	4	4	4	4
	30257Y	-	LMP-M/C Mdl 30 Stamped "ABS"	1	1	1	1
	26331	-	Licence Lmp	1	1	1	1
	60202R	-	LMP-S/T/T Mdl 60	4	4	4	4
	76210A5	-	Artiflex Cable		24		27

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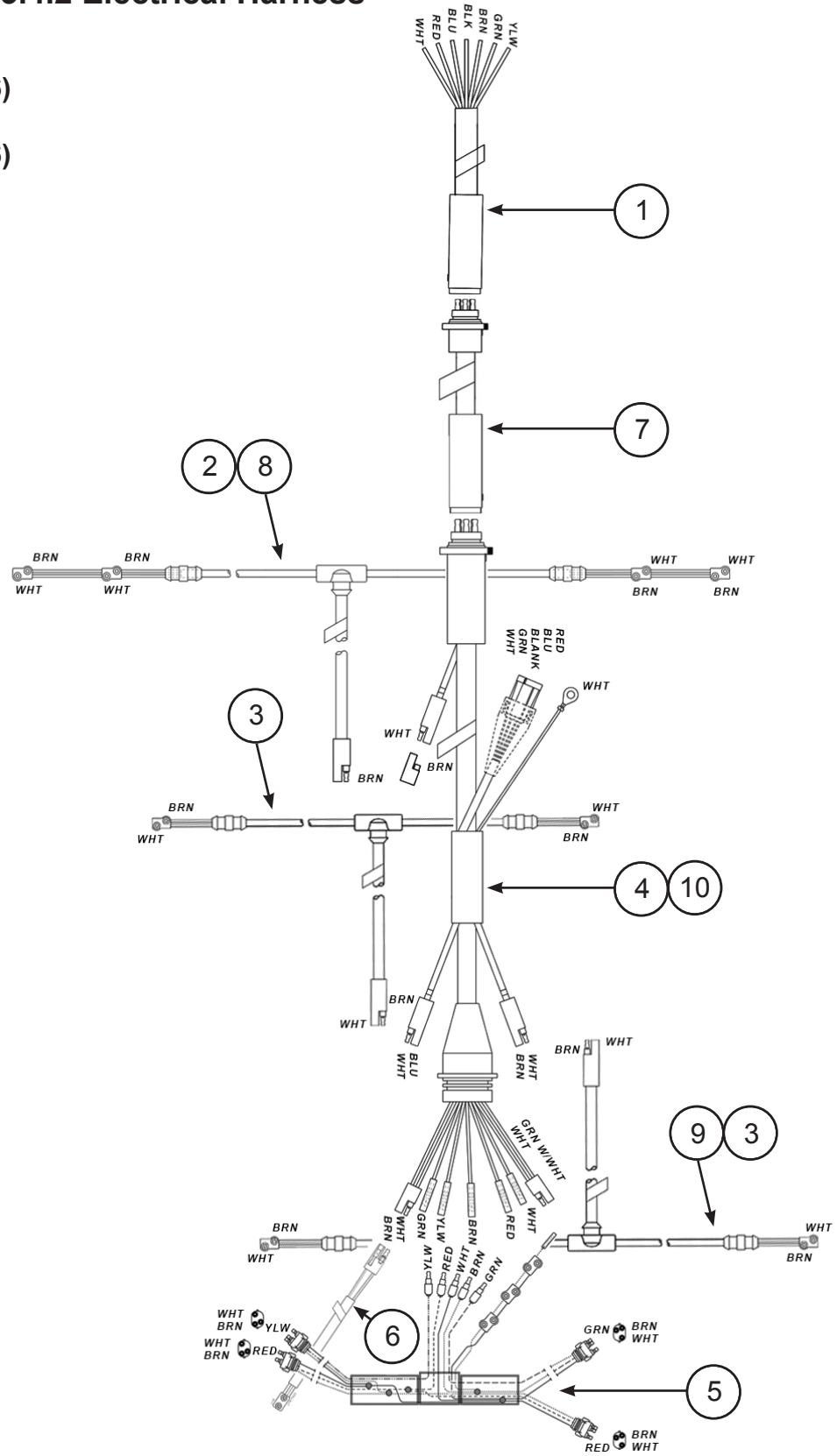
Section 3.4.2 Electrical Harness

TD-40-FBR
TD-40-FBR (24+6)
TD-54-FBR
TD-54-FBR (28+6)



Section 3.5 Air Brake System

Ref.	Part #	Rev.	Description	Quantity			
				TD-40-FBR	TD-40-FBR (24+6)	TRD-54-FBR	TRD-54-FBR (28+6)
1	1011E	-	Emergency Gladhand- Aluminum	1	1	1	1
2	1011S	-	Service Gladhand- Aluminum	1	1	1	1
3	16128-66	-	Hose Assembly-28”-3/8”ID Hose-3/8” Fx&3/8” Swivel Ftg&Adapter	1	1	1	1
4	16130-66	-	Hose Assembly-30”-3/8”ID Hose-3/8” Fx&3/8” Swivel Ftg&Adapter	4	4	6	6
5	16154-66	-	Hose Assembly-54”-3/8”ID Hose-3/8” Fx&3/8” Swivel Ftg&Adapter			2	2
6	16160-66	-	Hose Assembly-60”-3/8”ID Hose-3/8” Fx&3/8” Swivel Ftg&Adapter	6	6	6	6
7	110500	-	Spring Brake Control Valve	1	1	2	2
8	400 500 102 0	-	ECU/Dual Mod. 2S/2M	1	1	1	1
9	2001	-	Air Tank 1488CI-9 1/2” OD-22 1/2” Lg-Std. Brkts-Singles			1	1
10	2002	-	Air Tank 2800CI-12” OD-27 1/2” Lg-Std. Brkts-Singles	1	1	1	1
11	108-4	-	External Seat Drain 1/4” Thread	1	1	2	2
12	112-E	-	Close Nipple 3/4”Tube	1	1	1	1
13	114-66	-	Frame Fitting1-1/8”3/8”-Fem3/8”-Fem	2	2	4	4
14	115-86	-	Frame Fitting1-1/8”1/2”-Male3/8”-Fem	1	1	1	1
15	115-C	-	90 Street Elbow 3/8”Tube	5	5	12	12
16	121-E	-	Hex Head Plug 3/4”Tube	1	1	1	1
17	161201-8	-	Swivel Adaptor 3/8” ID 1/2” Thread	2	2	2	2
18	124-C	-	45 Street Elbow 3/8”Tube	1	1		
19	1926-01	-	500’ Airbrake Tubing 3/8” OD Blk	33	33	33	35
20	1928-05	-	500’ Airbrake Tubing 1/2” OD Red	33	33	66	66
21	2000-FB	-	Vibration Isolator	2	2	4	4
22	122-ED	-	Male Connector 3/8” Tube-1/2” Thread			1	1
23	PL1364-6	-	DOT AB Union Tee 3/8”Tube			1	1
24	PL1364-8	-	DOT AB Union Tee 1/2”Tube			1	1
25	PL1368-8C	-	DOT AB Male Conn. 1/2”Tube-3/8” Thread			1	1
26	PL1369-6C	-	DOT AB Male Swivel 3/8”Tube-3/8” Thread	2	2	3	3
27	PL1369-8C	-	DOT AB Male Swivel 1/2” Tube-3/8” Thread	2	2	9	9
28	PL1372-6B	-	DOT AB Male Swivel Branch Tee 3/8”Tube-1/4”thrd	1	1	1	1
29	449 326 005 0	-	Power Cable 1.6ft. w/Packard Connector	1	1	1	1
30	449 713 008 0	-	Sensor Extensions 5.9ft.	2	2	2	2

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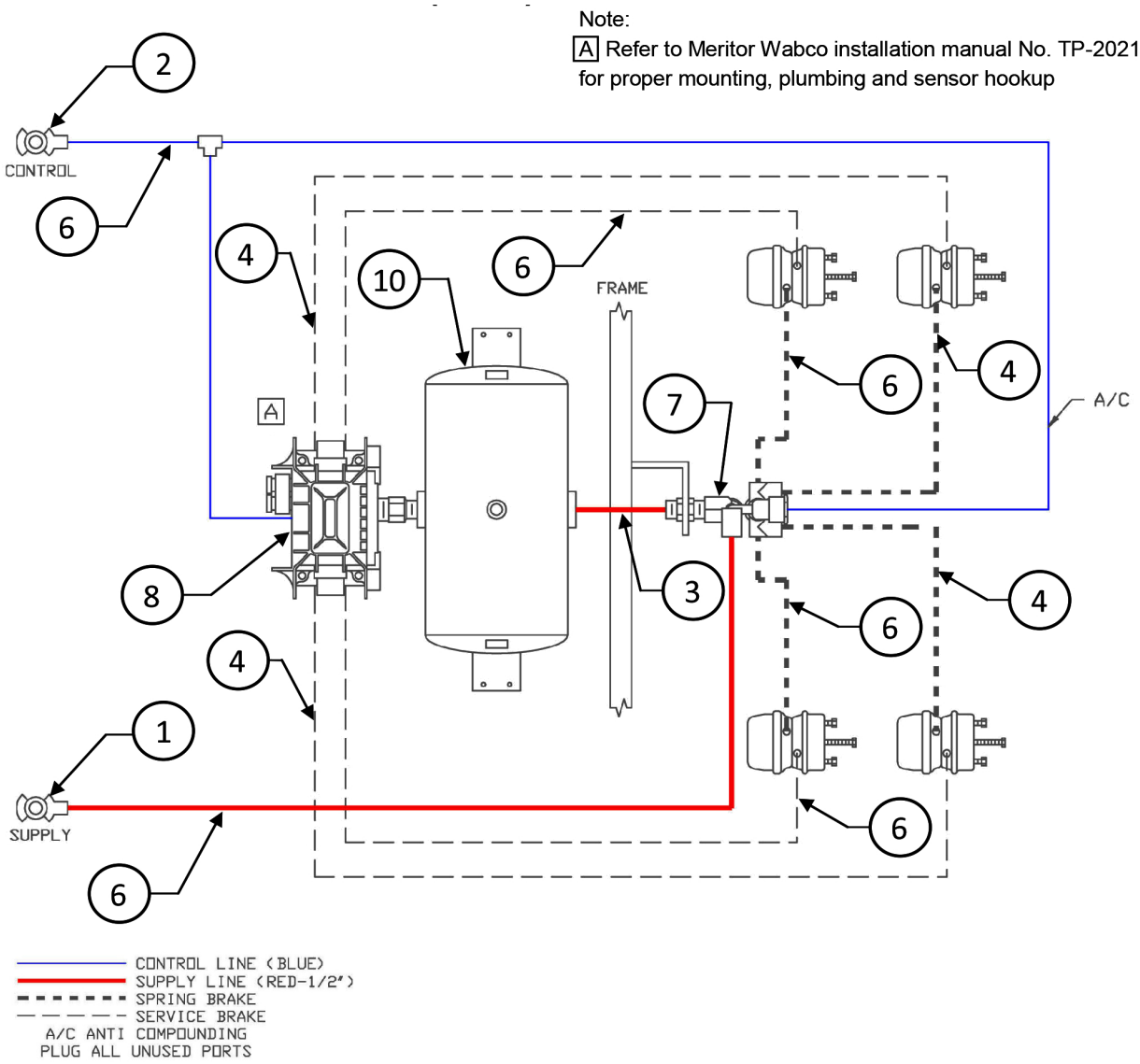
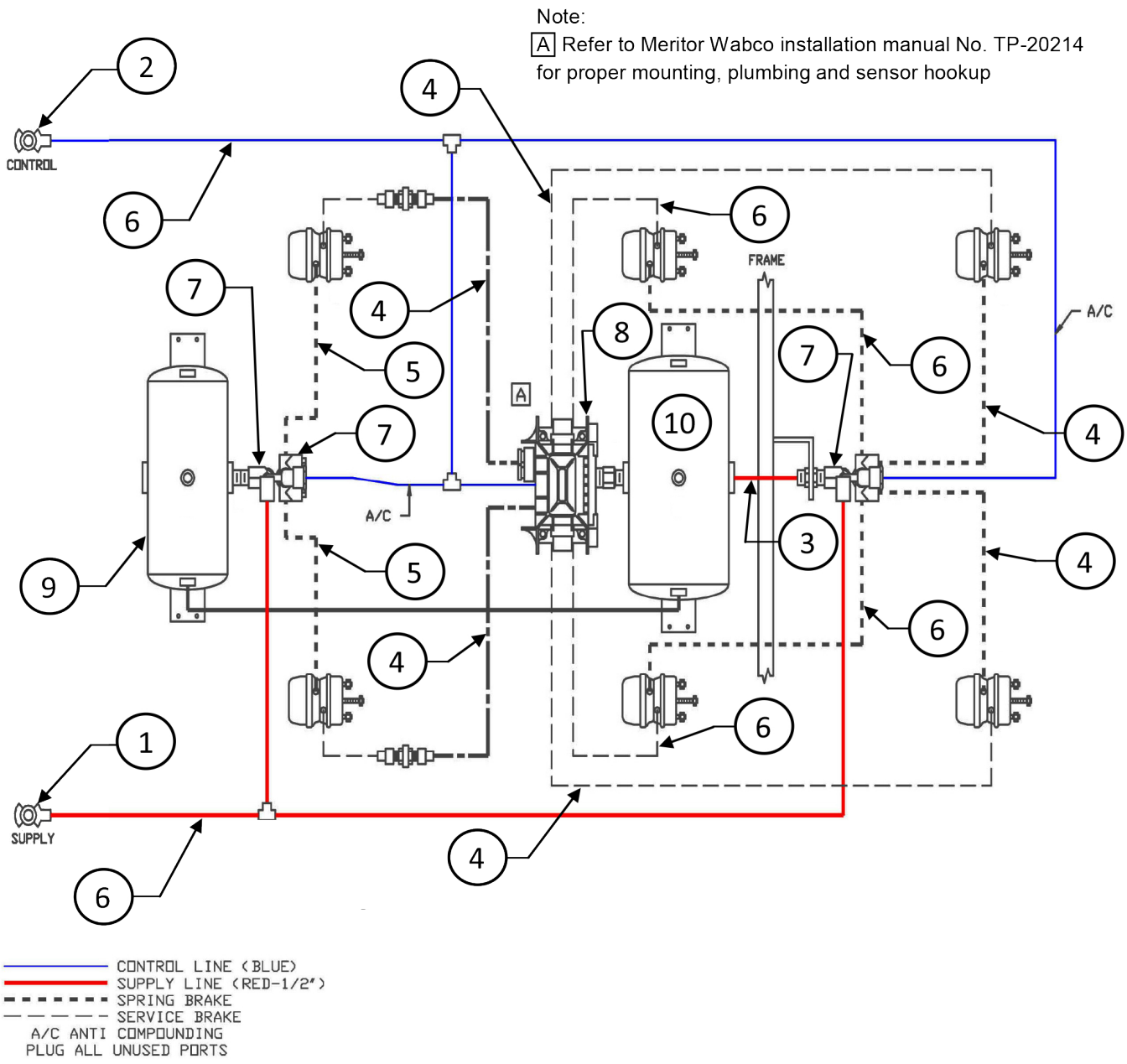
Section 3.5 Air Brake System

TD-40-FBR
TD-40-FBR (24+6)



Section 3.5 Air Brake System

TRD-54-FBR
TRD-54-FBR (28+6)



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Section 3.6 Decals

Part #	Description	Quantity	TD-40-FBR	TD-40-FBR (24+6)	TRD-54-FBR	TRD-54-FBR (28+6)
48095	Trailmax Logo		2	2	2	2
48100	Notice - Comply with Requirements		1	1	1	1
TP-95172	MW ABS Lamp Decal		1	1	1	1
48785	GSM - OK Inspected		1	1	1	1
48099	Maintain 60% of Load		2	2	2	2
48101	Warning - Before Towing		1	1	1	1
48106	Warning - Check Wheel Nut Torque		2	2	2	2
29868	Conspicuity Tape 2”x11” Red & White		55	65	65	75
48105	Warning - Hitch Bolts		1	1	1	1
48780	Mylar VIN Tag Cover 3 1/2” x 8”		1	1	1	1
48107	3/4” Blue Striping		55	65	65	75
8161	Sealco 105 PSI Minimum Supply Line		1	1	1	1
8144	Caution - The use of Additives		1	1	1	1
48112	Model TD-40- FBR	TD-40-FBR	2	2		
48113	Model TRD-54-FBR	TRD-54-FBR			2	2

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Section 4 Warranty Claim Procedure

At Gem State Manufacturing, we insist on a high level of quality materials and workmanship that go into every TrailMax trailer. Ultimately this will minimize the need for frequent service and warranty claims. However, in the event of a claim, we want to be as responsive as possible.

In the event that you have a problem with your trailer that may be warranty related, your cooperation is appreciated when the following steps are followed in an effort to process the claim expeditiously.

1. Have the trailer V.I.N. (Vehicle Identification 17 digit Number) and model No. available.

2. Refer to the Operators Manual when identifying defective parts. If the claim is structural related, photos may be required and are helpful in determining how to correct the problem. (Digital photo's can be sent via e-mail to customerservice@trailmax.com in *.jpg or *.jpeg format.)

3. Contact a TrailMax representative in your immediate area. If you do not have or can not find a representative in your area, then contact the factory Warranty Administrator for assistance @ 1-800-447-0213.

4. Give a detailed description and nature of the problem. Also leave contact name(s), phone no. and/or e-mail address.

5. A claim will be processed and reviewed for warranty approval. The factory Warranty Administrator must authorize all Warranty Claims before repairs can be made.

Note: All work must be done by an authorized TrailMax warranty station. Should you choose to make repairs prior to approval, you could assume full responsibility for repairs.

6. Defective parts must be returned to Gem State Manufacturing at 1705 Industrial Way, Caldwell, Idaho, 83605, for evaluation unless otherwise instructed.

7. Please make sure you have followed the procedure all the way through, failure to do so could hold up final process of Warranty Claim and approval for payment.

Our ultimate goal is to retain satisfied customers. Your cooperation is appreciated, as we will process the claim as expeditiously as possible to get you back in service.